

1. (Amended) An ink container for containing ink to be supplied to an ink jet head to which said ink container is detachably mountable, comprising:

an ink supply port for supplying the ink to said ink jet head;

an [a] air vent for fluid communication with ambience;

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a claw-like projection provided on a first side of said ink container; and

a latching lever provided on a second side opposite from said first side [ink container], said latching lever being resiliently supported on said ink container and having a latching claw.

Please add new Claims 43 to ¹⁴⁹~~108~~, as follows:

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~~43. A liquid container for an ink jet recording apparatus, capable of containing liquid to be used by an ink jet head, wherein said liquid container is detachably mountable to a holder having the ink jet head, said liquid container comprising:~~

~~a main body for containing the liquid;~~

~~a supplying port for supplying the liquid to the recording head, said supplying port being disposed in a portion which takes a bottom position during operation;~~

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a first engaging portion, provided on a side of said main body, for engaging with a first locking portion of the holder;

a second engaging portion which is resiliently displaceable; and

a supporting member for supporting said second engaging portion, provided on a side opposite from said side having said first engaging portion, said second engaging portion being resiliently engageable with a second locking portion of the holder.

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~~44. A liquid container according to Claim 43, wherein said main body accommodates a negative pressure producing material for retaining the liquid.~~

45. A liquid container according to Claim 43, wherein said main body accommodates a negative pressure producing material for retaining the liquid, and wherein said supplying port is provided with fibrous material.

46. A liquid container according to Claim 43, wherein said main body contains black ink.

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~~47. A liquid container according to Claim 43, wherein the inside of said main body is divided into three portions, and said supplying port and said air vent are~~

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provided for each of the three portions, and wherein said three portions contain yellow, cyan and magenta inks, respectively.

48. A liquid container according to Claim 43, wherein said elastic supporting member is provided with an operating portion for facilitating mounting or demounting of said holder.

49. A liquid container according to Claim 43, wherein when said container is mounted to the holder, said second engaging portion takes a position above said first engaging portion.

50. A liquid container according to Claim 43, wherein said second engaging portion is in the form of a projection, having a height of approximately 1 mm, extended from said supporting member.

51. A liquid container according to Claim 43, wherein said supporting member is in the form of an elastic lever extended upwardly with inclination or curvature from a portion adjacent to a bottom portion of said opposite side.

52. A liquid container according to Claim 43, wherein said supporting member is in the form of an elastic

lever extended downwardly with inclination or curvature from a portion adjacent to a top portion of said opposite side.

53. A liquid container according to Claim 43, wherein each of two sides connecting said one side and said opposite side is provided with a projection contactable to a part of the holder.

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54. A liquid container according to Claim 43, wherein a normal line from a central portion of said supplying port to a line connecting a central portion of said first engaging portion and a central portion of said second engaging portion, is not more than 10 mm.

55. A liquid container according to Claim 43, wherein a normal line from a central portion of a contact portion of a supply tube of the recording head to said supplying port to a line connecting a central portion of said first engaging portion and a central portion of said second engaging portion, is not more than 10 mm.

56. A liquid container according to Claim 43, wherein said supplying port is on a line connecting a central portion of said first engaging portion and a central portion of said second engaging portion.

57. A liquid container according to Claim 43, wherein said holder is detachably mountable relative to a carriage of the ink jet recording apparatus, and is provided with a mounting engageable portion for mounting to the carriage, and wherein when the holder is mounted to the ink jet recording apparatus, said second engaging portion takes a position above the mounting engageable portion.

58. A liquid container for an ink jet recording apparatus, capable of containing liquid to be used by an ink jet head, wherein said liquid container is detachably mountable to a holder having the ink jet head, said liquid container comprising:

a main body for containing the liquid;

a supplying port for supplying the liquid to the recording head, said supplying port being disposed in a portion which takes a bottom position during operation;

an air vent portion for fluid communication between inside of said main body and ambience;

a first engaging portion, provided on a side of said main body, for engaging with a first locking portion of the holder; and

a latch lever having a second engaging portion, provided on a side opposite from said side having said first engaging portion, said second engaging portion being

resiliently displaceable and being resiliently engageable with a second locking portion of the holder.

59. A liquid container according to Claim 58, wherein said latch lever is provided with an operating portion for facilitating demounting of said holder.

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60. A liquid container according to Claim 58, wherein said latch lever elastically moves toward said main body when said container is mounted or demounted relative to the holder.

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61. A liquid container according to Claim 58, wherein said main body accommodates a negative pressure producing material for retaining the liquid.

62. A liquid container according to Claim 58, wherein said main body accommodates a negative pressure producing material for retaining the liquid, and wherein said ink supplying port is provided with fibrous material.

63. A liquid container according to Claim 58, wherein said main body contains black ink.

64. A liquid container according to Claim 58, wherein the inside of said main body is divided into three

portions, and said supplying port and said air vent are provided for each of the three portions, and wherein said three portions contain yellow, cyan and magenta inks, respectively.

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65. A liquid container according to Claim 58, wherein said three chambers are disposed along a direction from said one side to said opposite side.

66. A liquid container according to Claim 58, wherein when said container is mounted to the holder, said second engaging portion takes a position above said first engaging portion.

67. A liquid container according to Claim 58, wherein said latch lever is in the form of a lever extended upwardly with inclination or curvature from a portion adjacent to a bottom portion of said opposite side.

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68. A liquid container according to Claim 58, wherein said latch lever is extended integrally from a neighborhood of a bottom portion of said main body, and is elastically movable about the neighborhood, and wherein said second engaging portion is disposed between the neighborhood and an operating portion provided at a free end of said latch lever.

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69. A liquid container according to Claim 58, wherein when said liquid container is mounted to said holder, said second engaging portion is inside the second locking portion of the holder, and is not extended outwardly.

70. A liquid container according to Claim 58 or 69, wherein said second engaging portion is disposed outside said latch lever.

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71. A liquid container according to Claim 58, wherein each of two sides connecting said one side and said opposite side is provided with a projection for contact with a part of said holder.

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72. A liquid container according to Claim 58, wherein an inclined surface is provided at a corner portion between a bottom side, in operation, of said main body and said one side.

73. A liquid container holder having an ink jet head, which is capable of holding a liquid container for containing ink to be used for recording, wherein said holder is provided with an opening for receiving the liquid container, said liquid container holder comprising:

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a tube for fluid communication with an ink supply port of said liquid container, provided at a portion taking a bottom position in operation;

a first locking portion engageable with a first engaging portion provided on one side of said liquid container; and

a second locking portion which is resiliently displaceable and resiliently engageable with a second engaging portion of a latch lever provided on a side of said liquid container opposite from said one side.

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74. A liquid container holder according to Claim 73, wherein each of two sides connecting a side of said holder having said first locking portion and a side thereof having said second locking portion, is provided with a stepped recess in which the associated one of two sides of said liquid container connecting said one side and said opposite side, slides.

75. A liquid container holder according to Claim 73, wherein a bottom portion in operation of said holder is provided with urging means for upwardly urging said liquid container.

76. A liquid container holder according to Claim 73, wherein said holder is detachably mountable

relative to a carriage of an ink jet recording apparatus, and said holder is provided with a mounting engageable portion for engagement with the carriage, and wherein said mounting engageable portion is below said second locking portion of the liquid container.

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77. A liquid container holder according to Claim 73, wherein an inside of said holder is divided into two zones, each of which is provided with said first and second locking portions, and wherein said liquid container containing one color ink is mountable to one of said zones, and said liquid container containing a plurality of inks in integrally formed chambers is mountable to the other zone.

78. A liquid container holder according to Claim 73, wherein an inclined surface is provided at a corner portion between a bottom side of said holder and a side having said first locking portion.

79. A liquid container holder according to Claim 73, wherein an inside of said holder is divided into two zones, and an inclined surface is provided at a corner portion between a bottom side and a side cutting said first locking portion in each zone.

80. A liquid container holder according to Claim 73, wherein said holder has an integral ink jet head, and said ink supply tube is in fluid communication with said ink jet head.

81. A liquid container holder according to Claim 73, wherein said holder is provided on a side with an electric contact for receiving electric signal to be supplied to the ink jet head.

82. A liquid container holder according to Claim 73, wherein the side of said holder having said second locking portion is provided with an holder operating portion to be used when said holder is mounted or demounted relative to a carriage of an ink jet recording apparatus, and said operating portion is disposed adjacent to the operating portion of said latch lever of said liquid container.

83. A liquid container holder according to Claim 80, wherein the ink jet head is provided with electrothermal transducers as ejection energy generating elements, and film boiling is caused in the ink by thermal energy provided by the electrothermal transducers, by which the ink is ejected.

84. A liquid container holder according to Claim 82, wherein said operating portion of said holder and said operating portion of the liquid container are disposed on a side extended crossing with a scanning direction of the carriage.

85. A liquid container holder according to Claim 82, wherein said operating portion of said holder is disposed below the operating portion of the liquid container.

86. A liquid container holder according to Claim 76, wherein said holder detachably retains the liquid container while said holder is mounted on the carriage.

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a main body for containing the liquid;

a supplying port for supplying the liquid to the recording head, said supplying port being disposed in a portion which takes a bottom position during operation;

an air vent portion for fluid communication between inside of said main body and ambience;

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a first engaging portion, provided on a side of
said main body, for engaging with a first locking portion of
the holder; and

a latch lever having a second engaging portion
which is resiliently displaceable and resiliently engageable
with the second locking portion of the holder;

wherein said supplying port is disposed between
said first engaging portion and said second engaging portion.

88. A liquid container according to Claim 87,
wherein said latch lever is provided with an operating
portion for facilitating demounting of said holder.

89. A liquid container according to Claim 87,
wherein said latch lever elastically moves toward said main
body when said container is mounted or demounted relative to
the holder.

90. A liquid container according to Claim 87,
wherein said main body accommodates a negative pressure
producing material for retaining the liquid.

91. A liquid container according to Claim 87,
wherein said main body accommodates a negative pressure
producing material for retaining the liquid, and wherein said
ink supplying port is provided with fibrous material.

92. A liquid container according to Claim 87,
wherein said main body contains black ink.

93. A liquid container according to Claim 87,
wherein the inside of said main body is divided into three
portions, and said supplying port and said air vent are
provided for each of the three portions, and wherein said
three portions contain yellow, cyan and magenta inks,
respectively.

94. A liquid container according to Claim 93,
wherein said three chambers are disposed along a direction
from said one side to said opposite side.

95. A liquid container according to Claim 87,
wherein said container is mounted to the holder, and said
second engaging portion takes a position above said first
engaging portion.

96. A liquid container according to Claim 87,
wherein said latch lever is in the form of a lever extended
upwardly with inclination or curvature from a portion
adjacent to a bottom portion of said opposite side.

97. A liquid container according to Claim 87,
wherein said latch lever is extended integrally from a

neighborhood of a bottom portion of said main body, and is elastically movable about the neighborhood, and wherein said engaging portion is disposed between the neighborhood and an operating portion provided at a free end of said latch lever.

98. A liquid container according to Claim 87, wherein when said liquid container is mounted to said holder, said second engaging portion is inside the second locking portion of the holder, and is not extended outwardly.

99. A liquid container according to Claim 87 or 98, wherein said second engaging portion is disposed outside said latch lever.

100. A liquid container according to Claim 87, wherein each of two sides connecting said one side and said opposite side is provided with a projection for contact with a part of said holder.

101. A liquid container according to Claim 87, wherein an inclined surface is provided at a corner portion between a bottom side, in operation, of said main body and said one side.

102. A reciprocally-movable carriage for carrying an ink jet cartridge for effecting recording by ejecting ink onto a recording material, said carriage comprising:

a positioning member for engagement with a first side of the ink jet cartridge to correctly position it;

an electrode contact for transmitting an electric signal relating to ejection of the ink to the recording head; and

a guiding member elastically supported at a position corresponding to an engaging portion provided on a second side of said ink jet cartridge opposite from said first side.

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103. A carriage according to Claim 102, further comprising a covering portion provided above said electrode portion and extended so as to cover a part of a space for receiving the ink jet cartridge.

104. A carriage according to Claim 102, wherein said positioning member and said electrode contact are disposed at the same side.

105. A carriage according to Claim 102, wherein said guiding member is provided at the side opposite from the side having said electrode contact.

106. A carriage according to Claim 102, wherein the ink jet cartridge includes a holder provided integrally with the recording head and an ink container, detachably mountable relative to the holder, for containing ink to be supplied to the recording head, and the ink container is provided with a latch lever engageable with the holder, and wherein the guiding member of said carriage is positioned at the same side as the latch lever.

107. A carriage according to Claim 102, further comprising:

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two bearings, disposed spaced from each other, for slidable engagement with a guide shaft of an ink jet apparatus; and

two nip portions, disposed spaced from each other and disposed parallel to the guide shaft, for slidable engagement with guide rails supported on the ink jet apparatus;

wherein a distance between two members constituting such one of the nip portions as is closer to the guiding member of the ink jet cartridge is larger than a distance between two members constituting the other nip portion.

108. An ink jet apparatus comprising a carriage according to any one of Claims 102 to 107, and control means

for generating the electric signal for ejection of the ink from the recording head.--

[Please rewrite Claims 2 to 42, which were cancelled but which nevertheless received an action on the merits, in amended form as new Claims 109 to 149, as follows:]

--109. An ink container according to Claim 1, wherein a top side of said ink container adjacent said first side is provided with a stepped portion.

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110. An ink container according to Claim 1, wherein a projection is provided on a top end portion of a side connecting said first and second sides adjacent said first side.

111. An ink container according to Claim 1, wherein said latching lever is supported on a bottom side of said ink container adjacent said second side, and is inclined or curved outwardly.

112. An ink container according to Claim 1, wherein said first side having the claw-like projection is inclined adjacent a bottom of said ink container.

113. An ink container according to Claim 1, wherein said container contains only one color ink.

114. An ink container according to Claim 1, wherein said container contains a plurality of color inks, and wherein said container is partitioned into a plurality of chambers, each of which has said supply port, to contain the color inks.

115. An ink container according to Claim 114, wherein the plurality of supply ports are arranged in a direction from said first side to said second side.

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~~116. An ink container holder for holding an ink container for containing ink to be supplied to an ink jet head and being detachably mountable to a reciprocally-movable carriage, said ink container holder comprising:~~

~~an opening for receiving the ink container;~~

~~an ink receiving tube for receiving the ink from said ink container;~~

~~a first internal wall having a first engaging hole for engagement with a claw-like projection of the ink container; and~~

~~a second internal wall having a second engaging hole for engagement with a latching claw of a latching lever of the ink container.~~

117. An ink container holder according to Claim 116, wherein an engaging recess is formed in a top portion of a wall connecting said first internal wall and said second internal wall at an end adjacent said first internal wall.

118. An ink container holder according to Claim 116, further comprising a latching lever guide groove for guiding the latching lever of the ink container, said guide groove having the second engaging hole.

119. An ink container holder according to Claim 116, further comprising urging means for urging a bottom surface of the ink container toward the opening.

120. An ink container holder according to Claim 116, wherein a plurality of ink receiving means are provided to extend in a direction from the first internal wall to the second internal wall.

121. An ink container holder according to Claim 116, further comprising a plurality of partition walls for partitioning the opening into a plurality of portions, for each of which said first engaging hole and said second engaging hole are provided.

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~~122. An ink container holder according to Claim 121, wherein the plurality of partition walls is two, and wherein one of the portions receives a one color ink container and the other receives color containers.~~

~~123. An ink container holder according to Claim 121, wherein a crossing portion between said bottom and said first internal wall is provided with an inclined portion.~~

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~~124. An ink container holder according to Claim 116, further comprising a recording head and an ink passage through which the ink receiving tube is in fluid communication with the recording head.~~

~~125. An ink container holder according to Claim 124, wherein said holder is mounted on a carriage reciprocally-movable, and said carriage comprises a positioning portion, on a first side, for positioning the ink container; an electric contact for electric connection with head contacts of an ink jet head mounted to said ink container; and a guiding member, resiliently supported on a second side, for engagement with an engaging portion of said ink container holder.~~

126. An ink container holder according to Claim 125, wherein said electric contact and said guiding member are arranged opposite each other.

127. An ink container holder according to Claim 126, wherein an operating portion is projected out.

128. An ink container holder according to Claim 127, wherein said operating portion and said engaging portion are provided at different positions.

129. An ink container holder according to Claim 124, wherein said recording head has electrothermal transducers for generating thermal energy for ejecting ink.

130. An ink container holder according to Claim 129, wherein the thermal energy causes film boiling of the ink.

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131. An ink container holder for holding an ink container for containing ink to be supplied to an ink jet head with which said ink container is integral, said ink container holder detachably mountable to a carriage which is reciprocally-movable, comprising:

a first operating portion for mounting and demounting said ink container to said ink container holder; and

a second operating portion for mounting and demounting said ink container holder to said carriage;

wherein said first operating portion and said second operating portion are provided in a same side relative to a movement direction of the carriage.

132. An ink container holder according to Claim 131, wherein said first operating portion is located above said second operating portion.

133. An ink container holder according to Claim 131, wherein a plurality of such first operating portions are provided, which are arranged in a line.

134. A reciprocally-movable carriage for an ink jet apparatus, comprising:

a mounting portion for mounting an ink container holder;

a positioning portion, on a first side, for positioning the ink container;

an electric contact for electric connection with head contacts of an ink jet head mounted to said ink container; and

a guiding member, resiliently supported on a second side, for engagement with an engaging portion of said ink container holder.

135. A carriage according to Claim 134, further comprising a cover for covering a part of the ink container.

136. A carriage according to Claim 134, wherein said contact and said guiding member are faced to each other.

137. A carriage according to Claim 134, further comprising two bearings on a guide shaft and two sandwiching portions for sandwiching the guide shaft, wherein a distance between members constituting one of said sandwiching portions is larger than a distance between members constituting the other of said sandwiching portions.

138. An ink jet apparatus having a carriage according to Claim 134, comprising means for supplying electric signals to said ink jet head to eject ink.

139. An ink container according to Claim 1, wherein a top portion of said latching lever is inclined away from the second side, and a tapered portion is contactable to the second side.

140. An ink container according to Claim 139, wherein said latching lever has a portion bent to be closer to the second side.

141. An ink container according to Claim 140, wherein said latching lever has a central portion having a larger thickness than the top portion.

142. An ink container according to Claim 1, wherein a bottom side of the ink container has a recess for escaping a spring of an ink container holder.

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143. An ink container according to Claim 1, wherein said ink supply port has a rectangular shape with a long side extending in a mounting direction of said ink container.

144. An ink container according to Claim 1, further comprising a guiding portion provided around said ink supply port, wherein said guiding portion is elongated in a mounting direction of said ink container.

145. An ink container according to Claim 115, wherein said ink container has yellow, magenta and cyan ink containing portions in this order.

146. An ink container according to Claim 1, wherein said latching lever is curved away from the second side.

147. A protection member for an ink container having an engaging projection, elastic latching lever with a latching claw, and an ink supply portion, said protection member comprising:

a protecting portion for covering said latching lever without contact thereto;

a bottom portion for covering said ink supply port, said bottom portion having an ink absorbing material or a cap;

a recess for engagement with said engaging projection; and

an engaging portion for engagement with a corner of the ink container adjacent the lever.

148. A combination of first and second ink containers, for being mounted to an ink container holder for holding a plurality of ink containers, and detachably mountable to a reciprocally-movable carriage, comprising:

a first operable portion connected to said first ink container, said first operable portion having a first mark indicative of a first color of ink, corresponding to a first mark on said ink holder; and